1.0 Bluewater

Bluewater Site Long-Term Custody Compliance Requirements

The following list comprises the long-term custody compliance requirements for the Bluewater site as defined in Section 3.2 of the site Long-Term Surveillance Plan:

1. Annual site inspection.

2. Annual inspection report.

3. Follow-up inspections and inspection reports, as necessary.

4. Site maintenance as necessary to sustain design functions.

5. Emergency measures in the event of catastrophe.

6. Environmental monitoring as required.

The Bluewater site long-term custody compliance requirements were fulfilled for 2002 as follows:

1. The site was inspected on May 7, 2002 in accordance with the inspection procedure as outlined in Section 3.3.2 of the Long-Term Surveillance Plan (LTSP).

2. This document serves as the annual inspection report.

3. No follow-up inspections were necessary.

4. No maintenance was necessary to sustain design functions.

5. No catastrophic events necessitated emergency measures.

6. The required ground water monitoring, as specified in Section 3.7.1 of the LTSP, was completed and the results are presented in this report.

Bluewater Site Inspection Results

T. G. Kirkpatrick (Chief Inspector) and M. J. Gardner (Assistant Inspector), both of MACTEC–ERS, the Technical Assistance and Remediation contractor at the U.S. Department of Energy (DOE) Grand Junction Office (GJO), conducted the inspection on May 7, 2002. The inspection was conducted in accordance with the *Long-Term Surveillance Plan for the DOE Bluewater (UMTRCA Title II) Disposal Site near Grants, New Mexico* (July 1997) and procedures established by DOE–GJO to comply with requirements of Title 10 *Code of Federal Regulations* Part 40.28 (10 CFR 40.28).

The purposes of the inspection are to confirm the integrity of visible features at the site, to identify changes in conditions that may affect site integrity, and to determine the need, if any, for maintenance or additional inspections and monitoring.

Two photographs are included in the Bluewater report. The photographs are referred to in the text of the report and on Figures 1–1 and 1–2 by photograph location (PL) numbers.

Entrance Gate, Access Road, and Access Gate

The entrance gate (at County Road 334) is a steel, double-swing stock gate. A chain and padlocks belonging to DOE and various utility companies that have rights-of-way across the site secure the gate. The access road leads from the entrance gate to the access gate. The access road is an all-weather road surfaced with crushed basalt and extends northward, along a narrow strip of DOE property, for approximately 1,700 feet to the site access gate. The access gate also is a steel, double-swing stock gate secured by padlocks keyed the same as the entrance gate. The entrance gate, access road, and access gate are all in excellent condition.

Perimeter Signs

Fifty-four perimeter or warning signs, designated P1 through P52 on Figures 1–1 and 1–2 (including perimeter signs P2A, P2B, P9A, and P9B), are posted at access points along right-of-way intersections with the site boundary and around the main and carbonate tailings disposal cells. At the Bluewater site, all signs are identical and convey the information typically conveyed on entrance signs at other Long-Term Surveillance and Maintenance (LTSM) Program sites. Perimeter sign P1, located at the access gate, was missing; inspectors replaced P1 (PL–1).

The signs are mounted about 5 feet above the ground on steel posts set in concrete. Posts for signs along the property boundary are located about 5 feet inside the actual boundary line. The remaining 42 perimeter signs are spaced about 500 feet apart around the main and carbonate tailings disposal cells about 100 feet from the toe of the cells. All signs are in good condition but the trefoil is starting to fade. The 2001 Annual Inspection Report noted that posts for perimeter signs P14, P15, and P16 are loosening, presumably from being used as rubbing posts by livestock. These signposts were checked and they remain sufficiently stable (see "Site Perimeter and Outlying Areas" below).

Site Marker and Boundary Monuments

A granite site marker is located between the southwest corner of the main tailings disposal cell and the northwest corner of the carbonate tailings disposal cell. The marker is in excellent condition.

Twenty-four boundary monuments define the site boundary. These monuments are typically inside the perimeter fence, several feet inside the true corner or boundary line. The boundary monuments and the general area around the monuments were inspected for signs of disturbance. No disturbance was found. Boundary monument BM–21 appears to be buried under about two feet of sand.

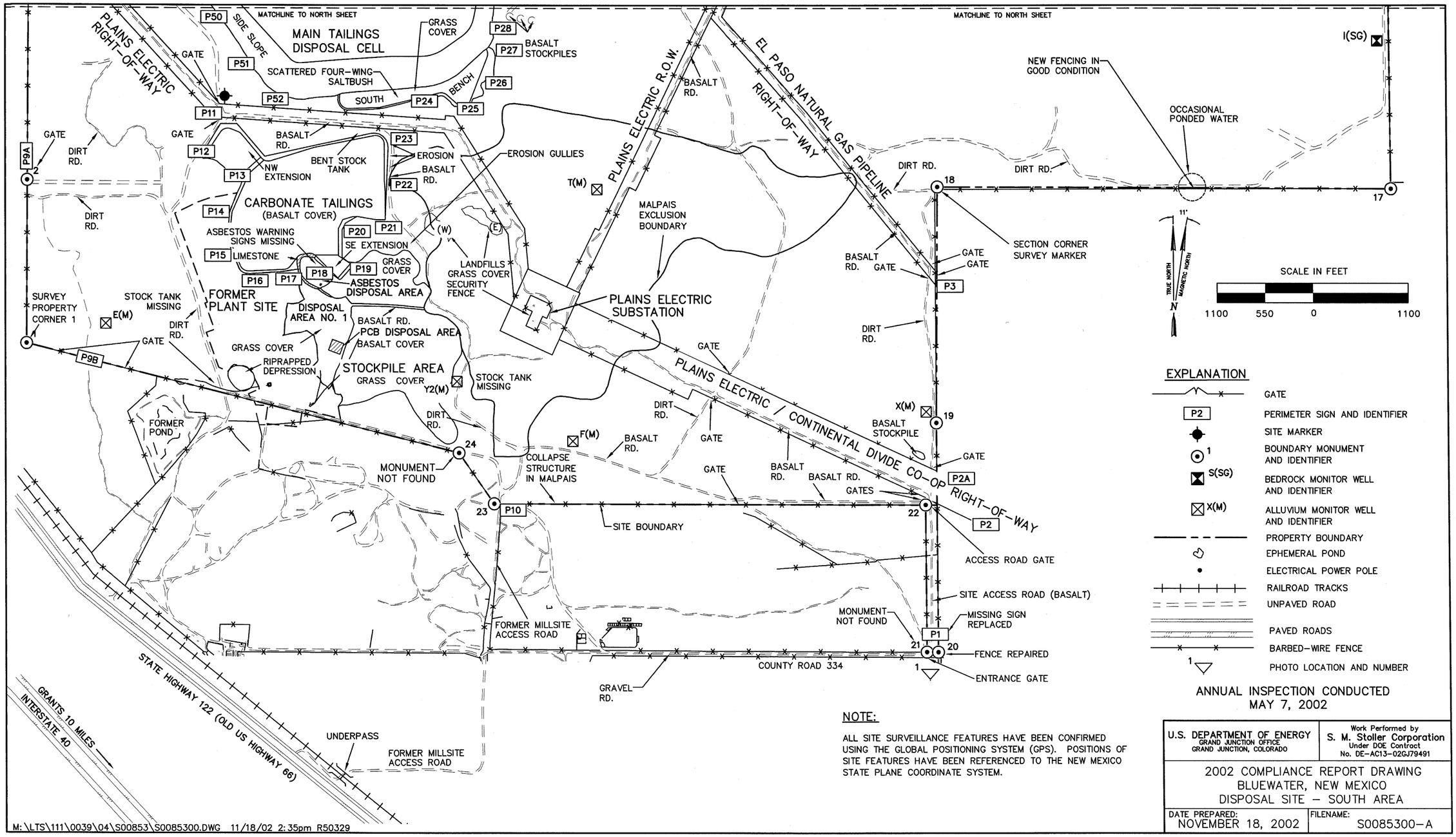

Figure 1–1. Bluewater, New Mexico, South Area, 2002

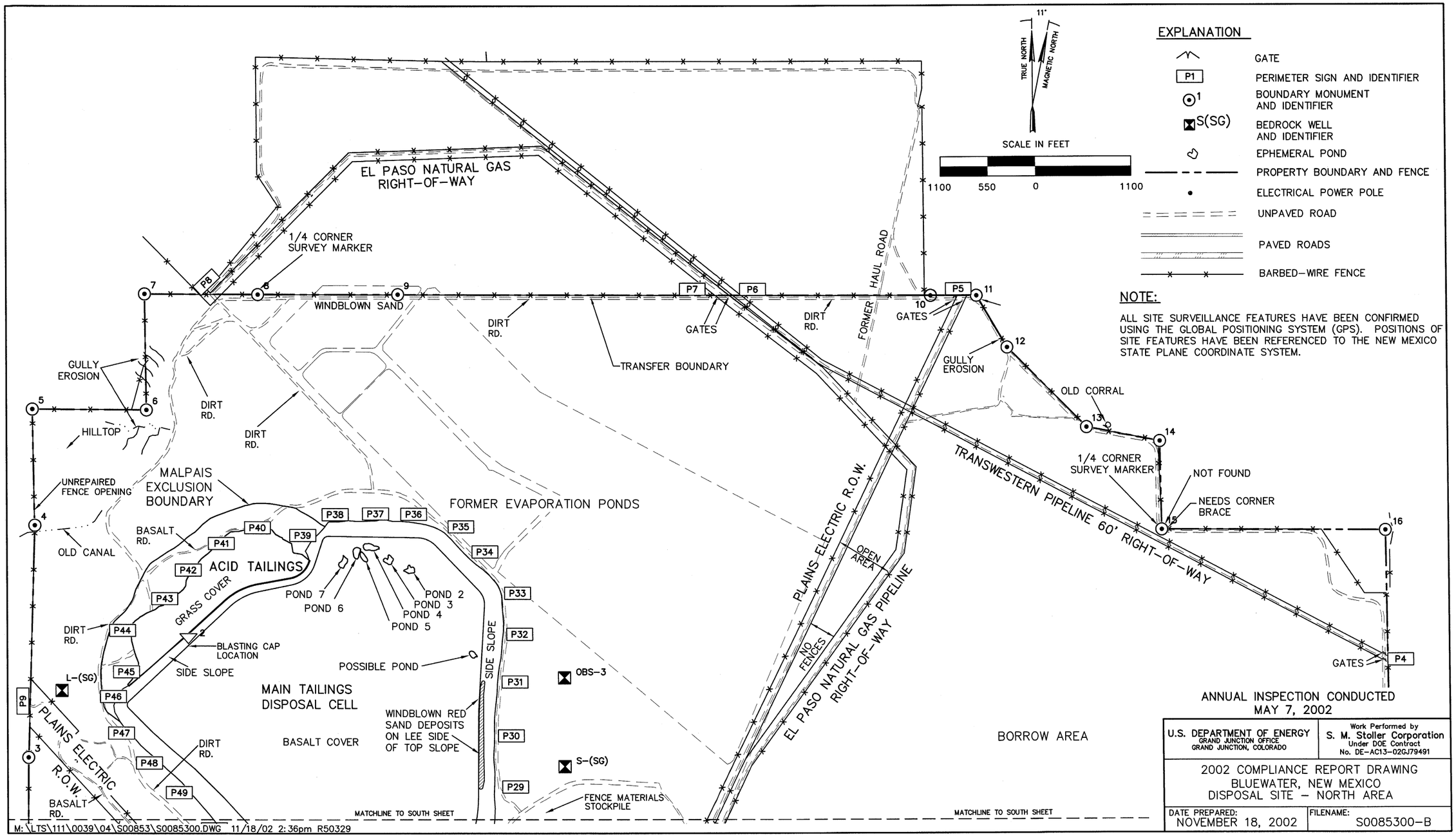

Figure 1–2. Bluewater, New Mexico, North Area, 2002

Monitor Wells

There are nine monitor wells at this site. All are inside the site boundary. The five wells screened in the alluvial aquifer include the letter "M" in the well identifier: E(M), F(M), T(M), X(M), and Y2(M). The other four wells are screened in the San Andres Limestone-Glorieta Sandstone, which is the bedrock aquifer at the site. The bedrock wells are L(SG), OBS–3, S(SG), and I(SG). The aboveground structures at the wells are in fair condition.

Wells previously had dedicated pumps, flow tubes, and stock tanks to contain purge water. Protective fencing placed around each well in 2001 to mitigate livestock damage was in good condition. Tanks were missing from E(M) and Y2(M). Surface support equipment for the monitor wells (wiring and PVC pipes) is weathered and in poor condition but has not impacted sampling activities.

Main Tailings, Acid Tailings, and South Bench Disposal Cells

These three disposal cells are contiguous and together constitute one large disposal area of approximately 320 acres. The main tailings disposal cell is covered with basalt riprap and slopes northward. The top slope grade decreases from 3 to 4 percent at the south end to less than 0.5 percent at the north end. The top slopes of the acid tailings and the south bench disposal areas are essentially flat and covered by grass. The side slopes of all three disposal cells are protected by basalt riprap. All three disposal cells are generally in excellent condition.

Widely scattered dead plants are present on the main tailings disposal cell, mostly on the east side slope. The plants are predominantly Russian thistle, an annual weed. Neither DOE nor the U.S. Nuclear Regulatory Commission (NRC) considers plant encroachment an issue at this site.

Fine-grained windblown sand has been deposited for about 1,000 feet along the top of the east side slope of the main tailings pile. Mostly, the sand surface is 3 to 4 inches beneath the riprap surface, but occasionally the sand fills the riprap interstices to the top. This accumulation is insignificant at this time. Plants are not preferentially establishing in the sand. Because the climate is relatively dry and plant cover upwind from the disposal cell is sparse, blowing sand will likely continue to accumulate. Inspectors will continue to monitor accumulations of windblown sand, here and elsewhere on site.

At the north end of the main tailings disposal cell, the top slope flattens to less than 0.5 percent. In previous years, inspectors found water ponded in this area in depressions. This year the depressions did not contain standing water.

The low spots are the result of settlement or an artifact of construction. Slimes from the settling ponds were placed in the northern part of the main tailings disposal cell. A grade of less than 0.5 percent is hard to achieve over an area as large as the north end of the main tailings disposal cell. Either mechanism could account for the depressions.

Inspectors will continue to monitor for ponding on top of the main tailings disposal cell. Given that evaporation greatly exceeds precipitation in this area, ponding is believed to be infrequent and brief; therefore, it is not a significant concern.

An unexploded blasting cap was found on the northwest edge on the top of the main tailings disposal cell. It was photographed (PL–2) so that inspectors could recognize other potential blasting caps and be cognizant of safety hazards. The blasting cap was not disturbed.

Carbonate Tailings Disposal Cell, Asbestos and PCB Disposal Areas, and Landfills

The top and side slopes of the carbonate tailings disposal cell are covered by basalt riprap (Figure 1–1). The top, for the most part, slopes gently eastward. The small northwest and southeast extensions slope in their respective directions. The carbonate tailings disposal cell and its extensions are in excellent condition. Erosion was observed along the east edge of the apron below the carbonate tailings cell during the 2001 inspection. Soil fill appeared to be washing away from the edge of the apron. This area was inspected in 2002 and remains unchanged. This does not affect the performance of the apron at this time but inspectors should continue to monitor the area.

The asbestos disposal area is a bowl-like feature or depression just south of the carbonate pile. It is in excellent condition. The north, west, and south side slopes of this depression are covered by limestone riprap; the bottom of the bowl is grass covered.

The small riprap-covered polychlorinated biphenyl (PCB) disposal area is in excellent condition. It is easily recognized because it is almost perfectly square, surrounded by grass, and covered with riprap. The two landfills in grass-covered depressions east of the carbonate pile are also in excellent condition.

Other Areas Inside the Site

Other areas inside the site were inspected by driving the site perimeter road and other roads, including some utility right-of-way roads. Much of the southern and western parts of the site are inaccessible by vehicle because they are covered by basalt flows. Inspectors walked portions of the perimeter fence that could not be inspected from the vehicle.

Several utility company rights-of-way cross the site. Stock fences with locked gates enclose these rights-of-way where the rights-of-way intersect one another, cross the site boundary, or cross the perimeter road. In 2000, inspectors cut the chains on access gates because nonstandard locks were installed and the inspection team did not have a key. Gates were re-secured with fence wire. Some of these were repaired in 2001 using repair links. LTSM Program management decided to leave right-of-way gates open as they were encountered, so there was no need to repair all the chains.

An electric power substation is enclosed by a security fence near the center of the site along the Plains Electric Company right-of-way (Figure 1–1). Fencing around this station generally is in good condition.

Two other disposal areas, Disposal Area Number 1 and the Stockpile Area, are located south of the carbonate tailings disposal cell. Both are grass-covered and in excellent condition.

Inspectors found cattle grazing on the site during the inspection (see below, “Site Perimeter and Outlying Areas”). Grazing is not part of the current management plan for this site.

Site Perimeter and Outlying Areas

The perimeter fence, a barbed-wire stock fence set several feet inside the property line, is generally in good condition. In 2001, fences were repaired in several locations, especially along the northwest and western boundaries. Inspectors found these repairs in good condition during the 2002 inspection. The inspectors repaired the fence at one location adjacent to the entrance gate.

In 2001, inspectors found fence purposefully left open in several locations. In 2002, the fence was not found left open and no evidence of intentional vandalism to the fence was apparent. There were a few cattle (approximately eight) on the property on the north side of the main tailings pile. These cattle apparently entered through an opening created by the cattle on the northwest side of the property. No evidence of cattle was found on the disposal cells and no damage was noted that could be attributed to the cattle.

An area along the site boundary at the east end of the site has flooded in the past but was dry this year. A subcontractor repaired approximately 800 feet of the perimeter fence in this area in 2001. The repair remains in excellent condition and is sufficient for keeping cattle out.

The perimeter road consists of a dirt track covered at places with crushed basalt. The road runs along the site boundary in much of the southern and most of the northern and eastern parts of the site. Most of the road is in good to excellent condition, but will require periodic maintenance. A culvert that was washing out south of boundary monument BM–16 was repaired in 2001. The repair was inspected and remains in excellent condition.

The area outside the site boundary for one-quarter mile was visually inspected for erosion, development, change in land use, or other phenomenon that might affect the long-term integrity of the site. None was seen.

Ground Water Monitoring Results

As a result of the timing of this report, ground water sampling and analysis results for 2002 are available. The required ground water sampling was conducted on October 17, 2002. As specified in the LTSP only the alluvial aquifer was sampled in 2002. All concentrations were less than the specified alternate concentration limit (ACL) for each parameter. Table 1–1 below summarizes the analytical results. Results of the U.S. Environmental Protection Agency (EPA)-required PCB sampling are included for completeness. PCBs were not detected. Point of compliance (POC) well T(M) was dry and therefore not sampled.

Table 1–1. Alluvial Aquifer Analytical Results Summary, October 2002

Alluvial Aquifer					
Constituent	**ACL**	**Background Well E(M)**	**POC Well F(M)**	**POC Well T(M)**	**EPA Well Y2(M)**
U-Nat, mg/L	0.44	0.001	0.015	dry	N/A
Selenium, mg/L	0.05	0.002	0.002	dry	N/A
Molybdenum, mg/L	0.10	0.002	<0.001	dry	N/A
PCB, µg/L	N/A	ND	ND	dry	ND

N/A = not applicable
ND = constituent concentration was below the method detection limit
mg/L = milligrams per liter

Conclusion

The Bluewater disposal site is in good condition at this time. The occurrence of ponding near the north end of the top of the main tailings pile will continue to be monitored for impacts. Measured ground water constituent concentrations remain less than their respective ACLs.

Bluewater Inspection Photographs

Table 1–2. Photograph Descriptions for Bluewater, New Mexico, Disposal Site

Photograph Location Number	Description
BLU PL–1	Replacing sign at entrance gate.
BLU PL–2	Unexploded blasting cap.

BLU 5/2002. PL−1. Replacing sign at entrance gate. (Date shown is incorrect. Actual date is 5/7/2002).

BLU 5/2002. PL−2. Unexploded blasting cap.

End of current text